

WHAT IS CLAIMED IS:

1. A linear motor comprising:

a stator including a stator yoke extending in a motor running direction and a plurality of permanent magnets arranged on the stator yoke at regular intervals along the motor running direction in alternately reversed directions to produce alternating polarities; and

a moving part positioned generally parallel to the permanent magnets of the stator and separated therefrom by a specific gap, the moving part including a plurality of magnetic teeth arranged side by side along the motor running direction and coils wound around the individual magnetic teeth;

wherein each of the magnetic teeth has a yoke portion located opposite to a side facing the stator, the yoke portion of each magnetic tooth being held in contact with the yoke portion of each adjoining magnetic tooth, and a tooth portion around which the coil is wound, the tooth portion extending from the yoke portion toward the stator; and

wherein cutouts formed in end surfaces of the yoke portions of the individual magnetic teeth opposite to their side facing the stator line up to form a groove-shaped channel running through the yoke portions of the successive magnetic teeth, and the multiple magnetic teeth

are joined together into a single structure by fitting a connecting member in the groove-shaped channel.

2. A linear motor comprising:

a stator including a stator yoke extending in a motor running direction and a plurality of permanent magnets arranged on the stator yoke at regular intervals along the motor running direction in alternately reversed directions to produce alternating polarities; and

a moving part positioned generally parallel to the permanent magnets of the stator and separated therefrom by a specific gap, the moving part including a plurality of magnetic teeth arranged side by side along the motor running direction and coils wound around the individual magnetic teeth;

wherein each of the magnetic teeth has a yoke portion located opposite to a side facing the stator, the yoke portion of each magnetic tooth being held in contact with the yoke portion of each adjoining magnetic tooth, and a tooth portion around which the coil is wound, the tooth portion extending from the yoke portion toward the stator; and

wherein a pair of projecting parts is formed on end surfaces of the yoke portions of the individual magnetic teeth opposite to their side facing the stator, whereby

gaps between the projecting parts form a groovelike channel running through the yoke portions of the successive magnetic teeth, and the multiple magnetic teeth are joined together into a single structure by fitting a connecting member in the groovelike channel.

3. The linear motor according to claim 2, wherein there are formed recesses which engage with said projecting parts in side surfaces of said connecting member.

4. The linear motor according to claim 1, wherein said connecting member is fixed in said channel by welding.

5. The linear motor according to claim 4, wherein each of the magnetic teeth is formed by stacking magnetic sheets in a direction perpendicular to the motor running direction, and said connecting member has a mating part which fits in said channel leaving specific gaps between the mating part and the channel and a flange portion which comes in contact with a top surface of the yoke portions of the magnetic teeth along the channel.

6. The linear motor according to claim 4, wherein the

depth H2 of said channel is made smaller than one half of the height H1 of the connecting member, establishing a relationship $H2 < H1/2$, so that the connecting member projects out from the channel.

7. The linear motor according to claim 1, wherein each of the magnetic teeth is formed of multiple magnetic tooth elements arranged in tandem in a direction perpendicular to the motor running direction, and each of the coils is wound around said multiple magnetic tooth elements to join them together into a single structure.

8. The linear motor according to claim 7, wherein said channel is formed in an area bridging rows of said multiple magnetic tooth elements and the connecting member is fitted in the channel thus formed.

9. The linear motor according to claim 1, wherein said connecting member is made of a magnetic material.

10. A linear motor comprising:

a stator including a stator yoke extending in a motor running direction and a plurality of permanent magnets arranged on the stator yoke at regular intervals along the motor running direction in alternately reversed directions

to produce alternating polarities; and

a moving part positioned generally parallel to the permanent magnets of the stator and separated therefrom by a specific gap, the moving part including a plurality of magnetic teeth arranged side by side along the motor running direction and coils wound around the individual magnetic teeth;

wherein each of the magnetic teeth is formed of multiple magnetic tooth elements arranged in tandem in a direction perpendicular to the motor running direction, and each of the coils is wound around said multiple magnetic tooth elements to join them together into a single structure.